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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/470,434 12/22/99 NEAL

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CHICAGO IL 60610

EXAMINER

LAM, T

ART UNIT

PAPER NUMBER

2834

DATE MAILED:

07/03/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/470,434

Applicant(s)

Neal

Examiner

Thanh Lam

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-57 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-57 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- *See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☐ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 13
- 18) ☒ Interview Summary (PTO-413) Paper No(s). 13
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other:

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DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-57 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3. Claims 1,3-26,29-37,39,43-48 are rejected under 35 U.S.C. 102(a) as being anticipated by Prior art (fig. 1 of the application).

Prior art discloses a high speed spindle motor comprising: a stator assembly comprising: a stator having multiple conductors that create a plurality of magnetic fields when electrical current is conducted by the conductors; and a body of a phase change material substantially encapsulating the stator; a rotatable hub having a magnet connected thereto in operable proximity to the stator; a shaft; a bearing around the shaft; and one of the shaft or bearing being fixed to the stator assembly and the other of the shaft or bearing being fixed to the rotatable hub.

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Regarding claim 3 wherein the bearing is fixed to the stator assembly.

Regarding claim 4 wherein the bearing is fixed to the body.

Regarding claim 5 wherein the shaft is fixed to the hub.

Regarding claim 6 wherein the magnet is fixed to the hub.

Regarding claim 7 wherein the magnet is fixed to the shaft which in turn is fixed to the hub.

Regarding claim 8 wherein the shaft is fixed to the stator assembly.

Regarding claim 9 wherein the stator further comprises a core and the conductors induce magnetic fields in the core when current is conducted by the conductors.

Regarding claim 10 wherein the core comprises steel laminations.

Regarding claim 11 wherein the core has a plurality of poles and the conductors comprise windings around said poles.

Regarding claim 12 wherein the conductors comprise a plurality of windings.

Regarding claim 13 wherein the spindle motor comprises a pancake motor and the conductors comprise windings mounted on a circuit board.

Regarding claim 14 wherein the conductors comprise electrical traces on a circuit board.

Regarding claim 15 wherein the hub comprises a hard drive disc support member.

Regarding claim 16 wherein the motor is able to operate at over 5000 rpm.

Regarding claim 17 wherein the motor is able to operate at at least 7500 rpm.

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Regarding claim 18 wherein the motor is able to operate at at least 10,000 rpm.

Regarding claim 19 wherein the magnet connected to the hub is a permanent magnet.

Regarding claim 20 wherein the bearing includes an upper bearing and a lower bearing.

Regarding claim 21 wherein the body surrounds the upper bearing and the lower bearing.

Regarding claim 22 wherein the stator assembly further comprises terminals for connecting the conductors to a power source external to the motor.

Regarding claim 23 wherein the terminals are partially encapsulated within the body.

Regarding claim 24 wherein apertures are formed within the body for mounting the high speed motor to a hard disc drive.

Regarding claim 25 wherein the magnet is concentrically disposed around the stator.

Regarding claim 26 wherein the bearing comprises ball bearings.

Regarding claim 29 wherein the stator concentrically surrounds the magnet.

Regarding claim 30 wherein the phase change material comprises a material that changes from a liquid to a solid due to a change in temperature.

Regarding claim 31 wherein the phase change material comprises a thermoplastic material.

Regarding claim 32 wherein the phase change material comprises a thermosetting material.

Regarding claim 33 wherein the phase change material comprises a material that changes from a liquid to a solid due to a chemical reaction.

Regarding claim 34 wherein the phase change material comprises an epoxy.

Regarding claim 35 wherein the stator and magnet are generally coplanar.

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Regarding claim 36 wherein a solid insert is substantially encapsulated within the body.

Regarding claim 37 wherein the insert provides structural rigidity to the stator assembly.

Regarding claim 39 wherein a first portion of a magnetic bearing is substantially encapsulated within the body and a second opposing portion of the magnetic bearing is attached to the hub.

Regarding claim 43 wherein the shaft is fixed to the body and the insert is positioned between the shaft and the bearing.

Regarding claim 45 wherein an enhancement magnet is substantially encapsulated within the body.

Regarding claim 46 wherein a thermoplastic material is injection molded to form the body.

Regarding claim 47 wherein the thermoplastic body is monolithic.

Regarding claim 48 wherein the phase change material includes ceramic particles.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 27-28,40,44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prior art.

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Prior art discloses the claimed invention except for the bearing comprises an oversized bearing having an outer diameter of over 13 mm. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the bearing as taught by Prior art to constitute the bearing comprises an oversized bearing having an outer diameter of over 13 mm, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Regarding claims 28 and 40, utilize a magnetic bearing or a hydrodynamic bearing for a motor is a subject matter of a design of choice.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 41-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prior art in view of Dunfield et al. (5,694,268).

Prior art discloses all aspect of the claimed invention except for the insert enhances dampening motor vibration and audible noise.

Dunfield et al. disclose the inserts enhances dampening of motor vibration and audible noise.

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the phase change body of Prior art and modify to place the insert as taught by Dunfield et al. in order reduce vibrations and noises.

Double Patenting

8. Claims 2,38,49-56 are provisionally rejected under the judicially created doctrine of double patenting over claims 1 and 11 of copending Application No. 09/470,425. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows: the phase change material has a coefficient of linear thermal expansion of less than 2×10^{-5} in/in/°F throughout the range of 0-250°F. the phase change material has a thermal conductivity of at least 0.7 watts/meter°K at 23°C.

Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other copending application. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

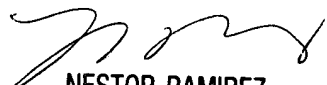
Conclusion

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9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh Lam whose telephone number is (703) 308-7626. The fax phone number for this Group is (703) 305-3431.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0656.


NESTOR RAMIREZ
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800



Thanh Lam

June 30, 2001